Women, jobs and opportunity in the 21st century

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Introduction

Over the 50 years since President Lyndon Johnson launched the War on Poverty, women have made unprecedented strides in education to the point where they now outnumber men at every level of the higher education ladder. In 1964, only 40.7 percent of women enrolled in college after graduating from high school. Today, that figure is 70.2 percent, and there are roughly 240,000 more women in college than men. About 60 percent of all Associate's and Master's degrees go to female candidates, and the ratio is almost the same for Bachelor's degrees. Women recently surpassed men in doctoral degrees awarded as well. All in all, the story of women's access to higher education and their graduation rates in recent decades is one of remarkable success.

Figure 1: Since 1977, more women than men have enrolled in degree- and certificate-programs combined.

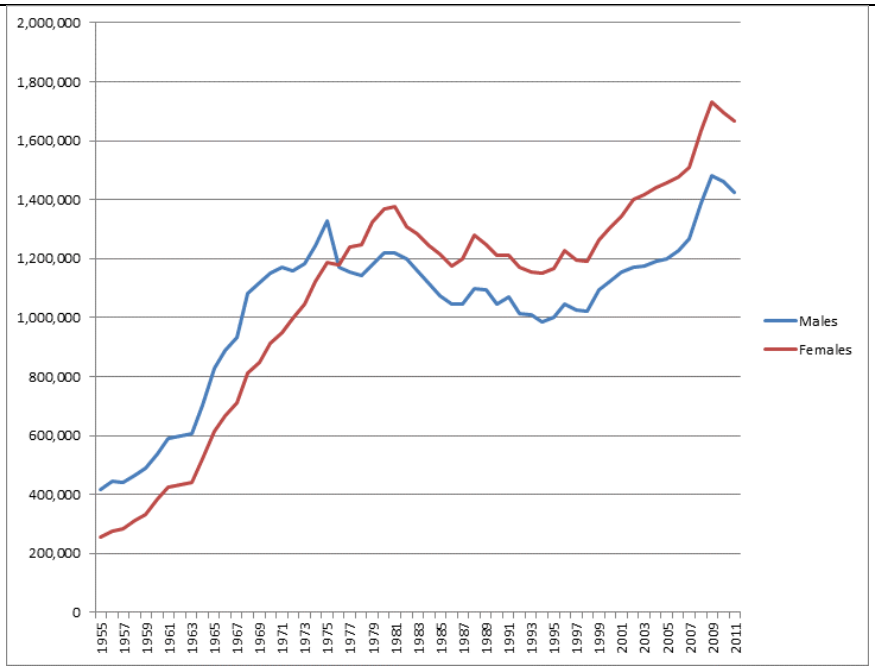
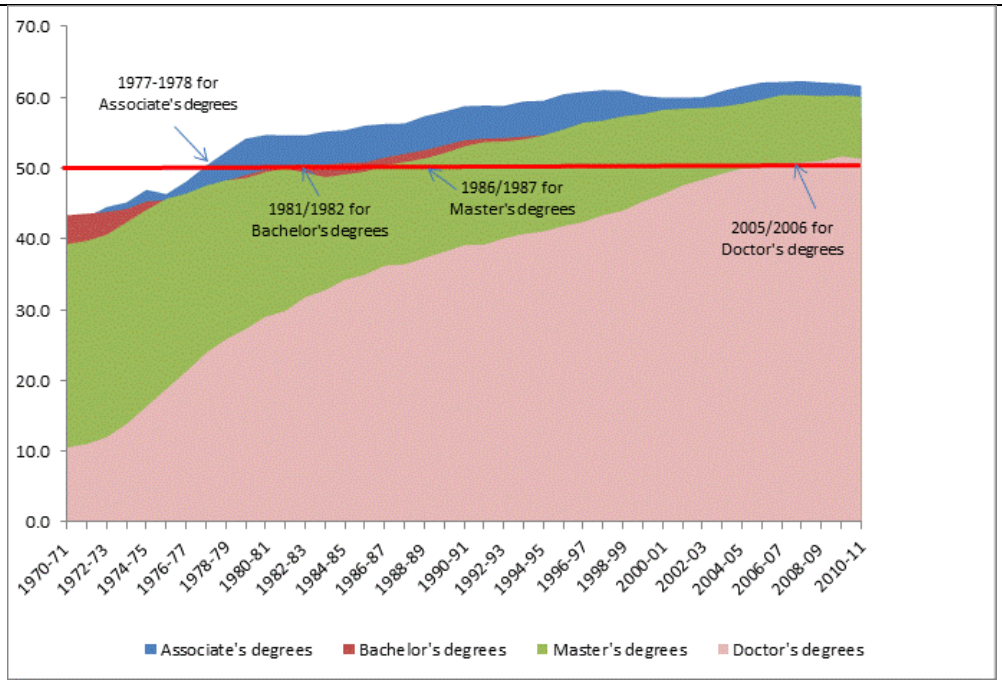


Figure 2: By degree time, women outnumber men at all education levels. Using the 50% horizonal red line as a marker, 1977 was the first year in which women outnumbered men in Associate's degrees; 1982 for Bachelor's degrees, 1986 for Master's degrees and finally 2005 for Doctoral degrees.



U.S. Department of Education, National Center for Education Statistics. Digest of Educational Statistics, 2012. Tables 232 and 310.

This paper examines a paradox: women in general are doing better in terms of educational attainment than ever before and yet still are failing to realize their full earnings potential, regardless of their educational level. Why, when we know that education is critical to women's advancement, do so many women facing future economic insecurity fail to pursue any kind of education after high school? And even if they do pursue postsecondary education or training, why do so many women make choices for themselves that limit their lifetime earnings?

This paper also will identify some of the existing barriers that limit women's educational success. We look at the life choices women make in school and in the workplace and how these choices influence wage outcomes. Further, we will examine the deep-seated biases and social pressures that cause so many women to gravitate to occupations, courses of study and college majors that offer relatively low pay and income insufficient to support a family. Finally we explore the implications of women's educational success on intergenerational economic mobility and improved economic opportunities over time.

A New Social Compact

The world has changed in countless ways since President Johnson launched the War on Poverty in 1964. Perhaps no single factor has influenced women's economic well-being more than the dramatic increase in the number and types of jobs requiring a higher education. In the 1960s, Americans with high school diplomas and those who belonged to unions or worked in the booming manufacturing sectors or construction industries could often support families comfortably on a single income. Today, that social contract has dissolved. The high school diploma has been replaced as the passport to the middle class by the much more costly Bachelor's degree.

Individuals with a Bachelor's degree now make 84 percent more over a lifetime than those with only a high school diploma, up from 75 percent more in 1999. Today, Bachelor's degree holders can expect median lifetime earnings approaching $2.3 million. By comparison, workers with just a high school diploma average roughly $1.3 million, which translates into a little more than $15 per hour. In 1970, 76 percent of middle-class America had only a high school diploma. By 2008, only 36 percent of middle-class America had only a high school diploma.

By the same token, 28 percent of jobs required postsecondary education and training beyond high school in 1973. Today that figure has risen to 60 percent, and by 2020, 65 percent of all jobs will require a postsecondary credential.[1] What explains this steady increase in the demand for higher levels of education to qualify for an increasing number of jobs? Part of the answer lies in skills biased technological change (SBTC) and the relative ability of the higher education machinery to keep up. Claudia Goldin and Lawrence Katz argue that the rate of technological development has - in the past four decades - outpaced the supply of college graduates.[2] In this race, technology won, and education has failed to keep pace. The nature of work has also changed. Jobs requiring physical skills have declined and jobs requiring cognitive and communicative skills have grown in importance, giving rise to a growing complexity of the workplace and work organization.

This new reality demands a level of awareness and planning on the part of all Americans. Young people have to make financial investments in their future earnings at the outset of their careers in a way that previous generations did not. Such an investment requires a level of sophistication about the cost of a higher education degree, student loans, and debt-to-earnings ratios that confounds many students and their parents. As a country, we must face up to a new obligation to inform citizens about how to obtain the education they need and how to pay for it responsibly. Evidence of our failure to assist the younger

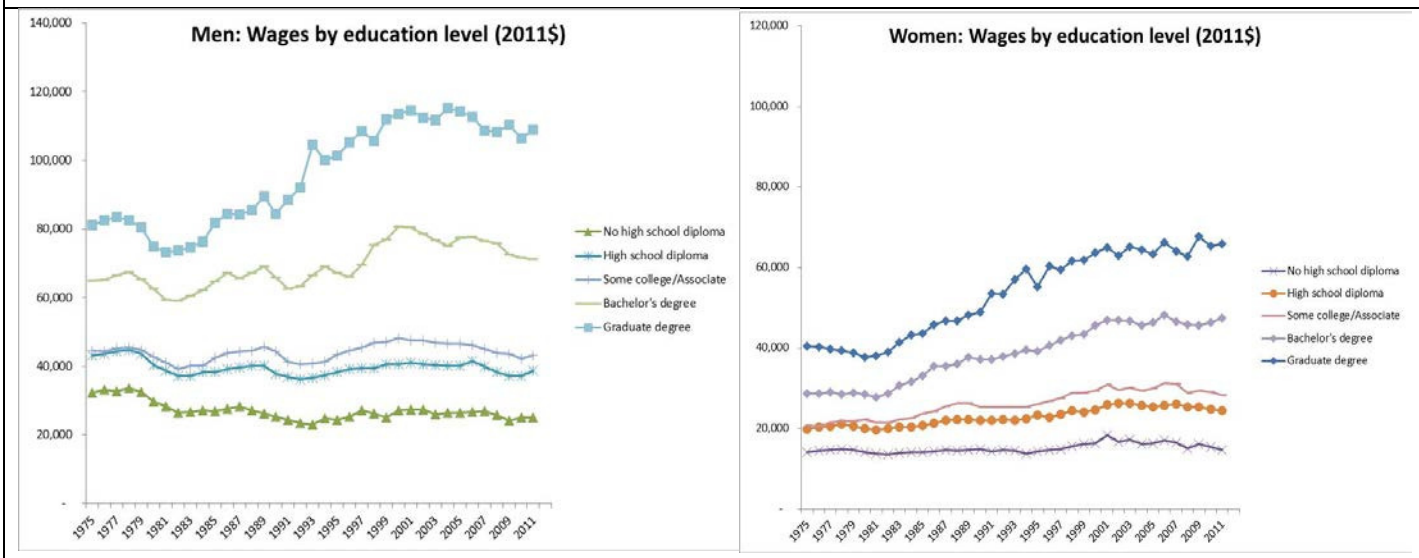
[1] Carnevale, Smith, Strohl (2013).

[2] Goldin and Katz (2010)

generation to traverse this pathway is seen in mounting student loan debt and increasing default rates. Student debt is now estimated at $1 trillion, while close to 9 percent of all student loan borrowers are in default, with a marginally larger number (one in 10) of borrowers over 90 days late.

But the burden of debt payments is especially significant for women, who, regardless of education levels, still find their earnings eclipsed by the persistent wage gap. In a recent report, the American Association of University Women (AAUW) shows that an average of 20 percent of women's take-home pay goes to service student loans, while for men, it's 15 percent.[3] The reasons for this are complex and by no means limited to the occupational choices women make. Nonetheless, little in the past half century has erased the career tracking that disproportionately shunts even highly educated women into lower-paying, lower-benefit, female-dominated professions. As a result, men continue to out-earn women at every level of educational attainment: women with a Bachelor's degree earn what men with an Associate's degree make, and women with an Associate's degree earn what men who only have some college credits make. On average, a woman with a PhD earns only what a man with a Bachelor's degree makes.

Figure 3: Real wages for men are higher than those for women at every level of educational attainment and do not seem to be improving over time.

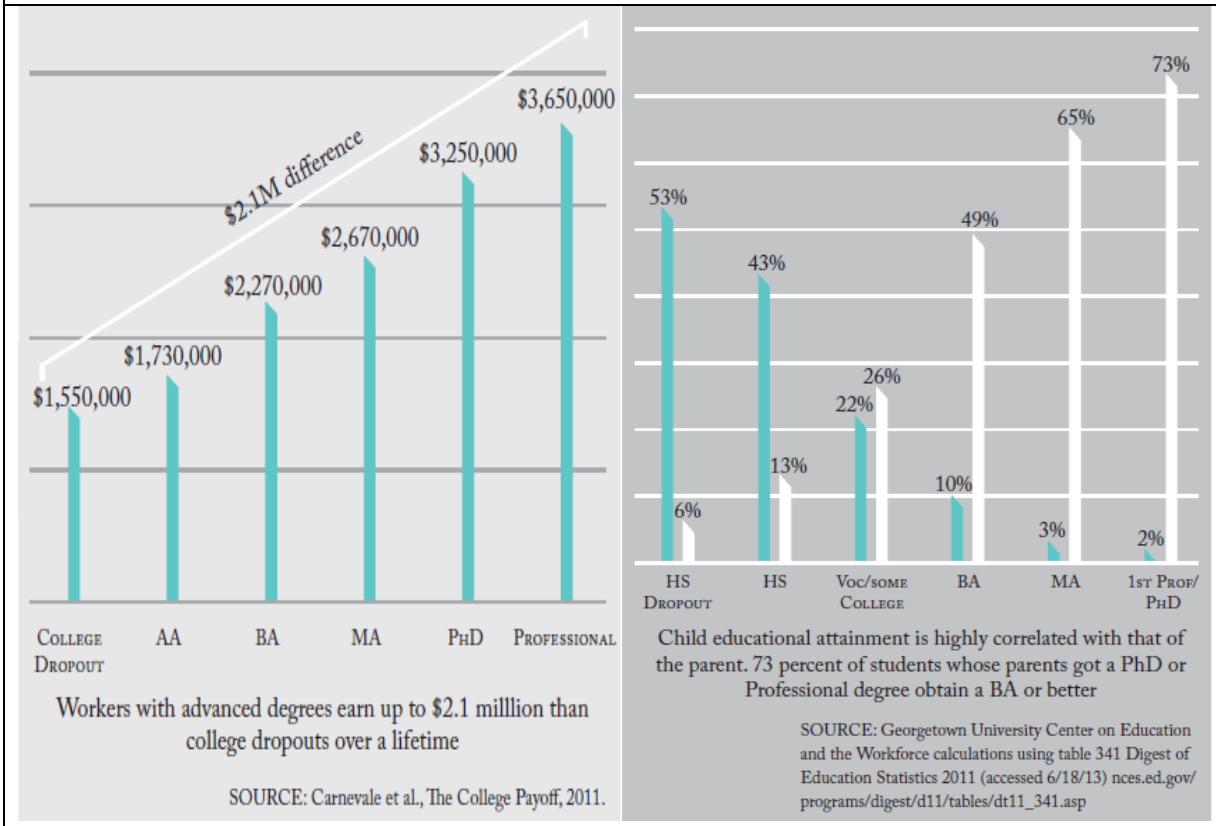


Source: CPS, Various years

[3] Corbett and Hill (2013)

Despite the gender pay gap, the lifetime value of a higher education is beyond dispute. In 2012, the median weekly earnings of a person with a high school diploma were $652 – $33,904 a year, far below the 200 percent of poverty threshold for a family of four. A person with an Associate's degree earns 20 percent more annually than someone with a high school degree, and someone with a Bachelor's degree earns 63 percent more.[4] Over a lifetime, a worker with an advanced degree can earn up to $2.1 million more than someone who drops out of college.[5]

Figure 4: The hierarchical relationship between educational attainment and earnings is fairly well established; and college-educated parents are in a better position to prepare their kids for college.



Source: Carnevale et al. The College Payoff, 2011

Upward mobility remains a challenge for women

Intergenerational mobility refers to the transfer of material wealth, education, economic opportunity and privilege to the next generation. A society that is highly mobile allows for upward movement of its

[4] http://www.bls.gov/emp/ep_chart_001.htm
[5] Carnevale et. al. The College Payoff, (2011)

children, irrespective of their parents' social standing or economic success. In an upwardly mobile society, one's own effort, determination, belief, hard work, and grit are rewarded with economic success. By contrast, a less mobile society relies more heavily on social influence, bias, and favoritism, and a child's economic success in that society is highly connected to the success level of his or her parents. By most relative estimates, the United States is one of the least mobile societies when measured from an income perspective or an education perspective. The Organization for Economic Co-operation and Development (OECD) finds that social mobility in the United States is lower than in many other developed countries.[6] By recent OECD estimates, 47 percent of a U.S. child's wealth is passed on from his or her parents and 42 percent of the time, a child's attainment level is reflective of what his or her parents achieved. We Americans are less likely than Europeans to achieve better economic outcomes than our parents. This inflexibility runs counter to the mainstream American ethos of "pulling yourself up by your bootstraps" and self-improvement by one's own efforts.

The traditional argument favoring inequality views the disparity as the price we pay for a dynamic economy that provides opportunity for the innovative. The stark reality, however, is that the degree of connectivity between educational attainment and choice of major and wages and salaries, inequality, and upward mobility is so pronounced that the inability to accumulate economic advantage in this generation has long-lasting consequences.

Higher education plays a significant role in breaking a generational cycle of poverty in a family. Studies show that parents' education levels strongly correlate to their children's educational outcomes, and thus to their economic success.[7] In fact, parental education is now more important than family income in determining a child's future opportunity. And since education levels condition earnings potential, education is now a far more important precursor to economic success. Among children whose parents have a PhD or professional degree, 73 percent obtain a Bachelor's degree or higher. Among those whose parents are high school dropouts, that figure is only 6 percent.[8]

Yet, when it comes to wage gains by age cohort, women have been falling behind. Women's wage attainment is not commensurate with their educational attainment, even for those who choose the "right" majors. While women's gains in educational attainment are indisputable, those gains are not rewarded by lower wage gaps with men later in life. In fact, the gender wage gap widens with age – a fact that has not changed in the past 30 years. In 1980, 40 percent of young women, (25 to 44 years old) and 25 percent of

[6] OECD, 2010

[7] Improving Child Care Access to Promote Postsecondary Success among Low-income Parents, p. 3.
[8] Georgetown University Center on Education and the Workforce calculations, 2011.

mature women, (45 to 64 years old) possessed postsecondary education and/or training beyond high school. By 2012, 67 percent of young women and 61 percent of mature women possessed postsecondary education and training beyond high school. Wage gains for mature women with postsecondary credentials, as compared with younger women, have also been substantial. Over the 32-year time frame, the wages of mature women with postsecondary credentials increased by 9 percentage points more than the increase for young women. Although women are running faster and faster, they still are not catching up with men. In 2012, young women with a Bachelor's degree earned just 77 cents for every dollar earned by young men with the same degree. For mature women with a Bachelor's degree, the gap with men had widened to 62 cents on the dollar.

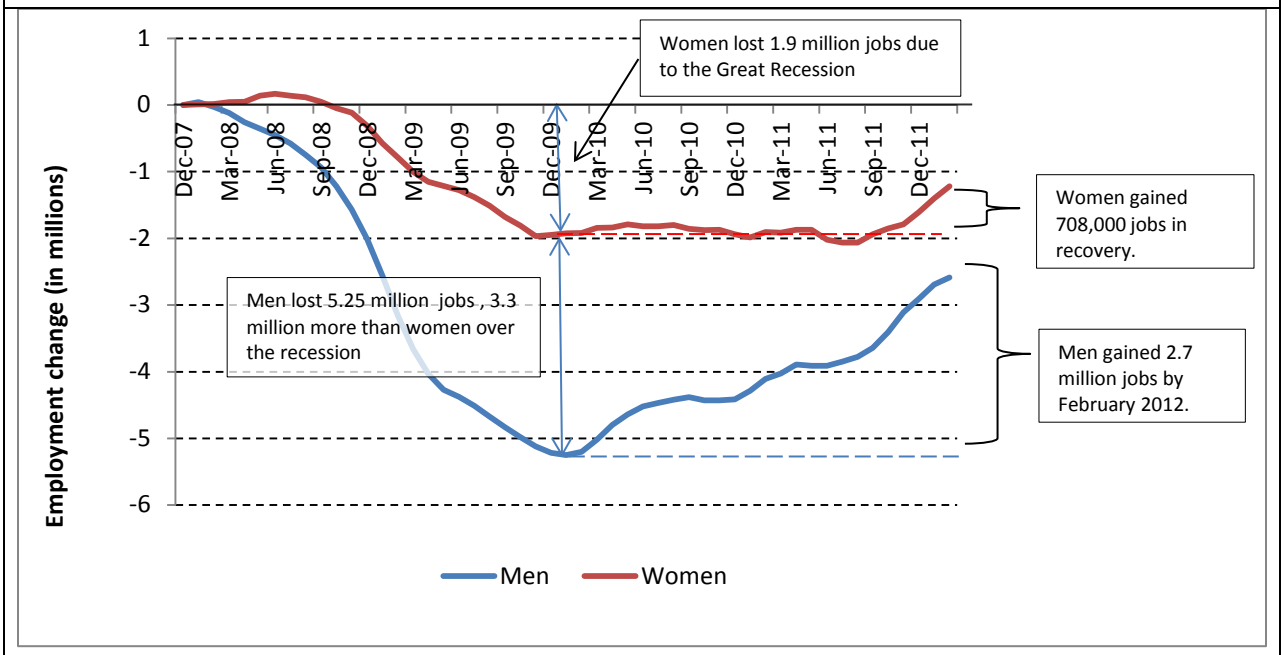
The standard explanations for the wage gap, e.g., relatively less job tenure, part-time work, and choice of occupations, have not changed substantially over the 30-year period. About one out of every four women works part-time today, a figure that has remained fairly stable over time, with some countercyclical changes in that pattern during recessions.[9] In general, many women choose to work part-time much more often than men for voluntarily (non-economic) reasons. The Bureau of Labor Statistics provides several explanations for voluntary part-time employment, including medical reasons, "childcare problems, family or personal obligations, school or training, retirement or Social Security limits on earnings, and other reasons."[10] For men, part-time work tends to be involuntary. Only one in 10 men works part-time.

The Mancession left women worse off, too

So much of the narrative of those affected by the Great Recession of 2007has focused on the plight of men that the negative impact on women is lost in the fray. At one end are the women who, during the economic slump, were applauded in the media for holding down jobs that brought in much-needed second-family incomes as the "mancession" destroyed jobs in male-dominated housing, construction, and manufacturing sectors. Yet the jobs women held were mostly in retail, food and hospitality, and healthcare support – sectors that offered lower wages and higher turnover than other sectors. While more men lost jobs during the Great Recession, more men than women have regained jobs during the recovery (See chart below).

[9] Twenty-six percent of working women worked part-time in 2012 (14% were part-time voluntarily, 8% for involuntary reasons and 5% for other reasons). CEW Analysis of CPS data, various years.
[10] Shaefer, 2009.

Figure 5: Over 3 million more men lost jobs during the recession than women, but men also gained jobs back in the recovery at a faster rate than women



Source: Carnevale et. al. *The College Advantage* (2010)

Education matters at all levels

Pre-K and K-12

In the United States, about half the inequality in the present value of lifetime earnings is due to factors determined by age 18.[11] A substantial body of research confirms the benefits of preschool education, finding both long- and short-term improvement in children receiving preschool education that can significantly affect the likelihood of their economic success. Studies show that early childhood education develops critical soft skills such as cognitive learning, attention, motivation, and self-confidence, making it more likely for a child to succeed in school and in the workforce.[12] Thus, expanding early childhood education results in an unparalleled economic return on investment. According to University of Chicago economics professor and Nobel Laureate James Heckman, pre-K programs for disadvantaged children have a 7-10 percent rate of return, meaning that for every dollar a

[11] See James J. Heckman, "The Case for Investing in Disadvantaged Young Children," *Big Ideas for Children: Investing in our Nation's Future*, p. 49, available at http://www.heckmanequation.org/content/resource/case-investing-disadvantaged-young-children.
[12] See http://www.npr.org/blogs/money/2011/08/12/139583385/preschool-the-best-job-training-program.

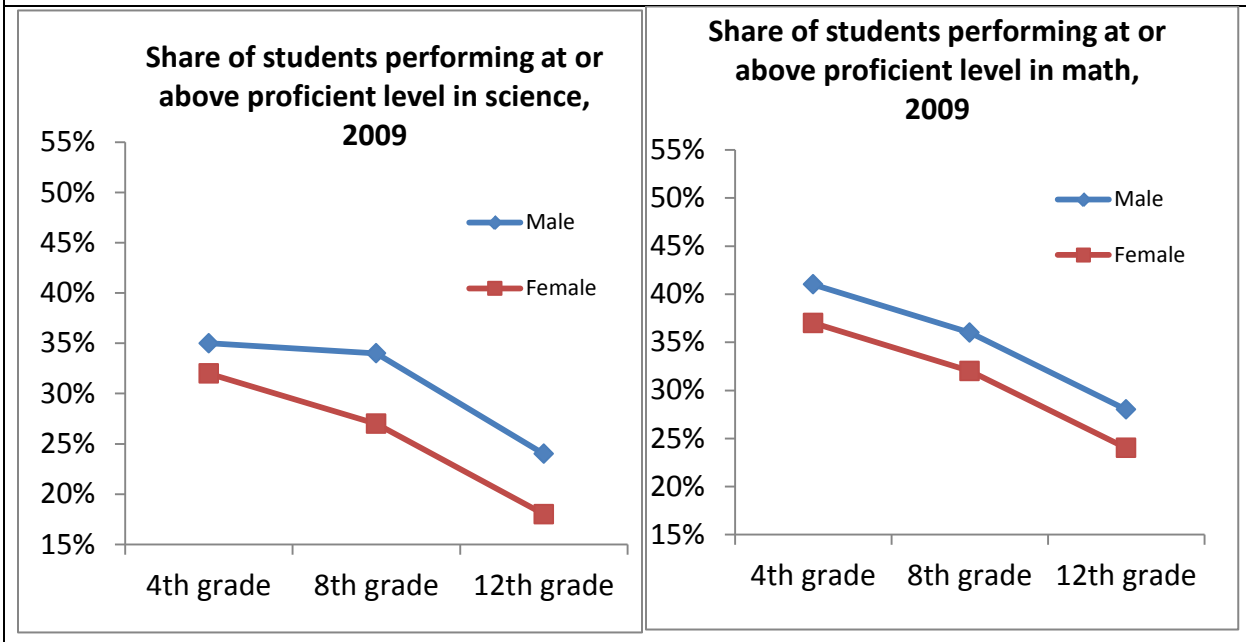
state spends on preschool, it will get back $60 to $300 from increased earnings and the decreased need for public services over that child's lifetime.[13] Former Federal Reserve Chairman Ben Bernanke has also touted the economic benefits of early childhood education, noting that "very few alternative investments can promise that kind of return."[14]

Once a child reaches elementary school, the achievement gaps between wealthy and low-income students remain locked in place through college. [15] Because public schools in the United States continue to be financed largely from local property taxes, students from low-income families are likely to attend public schools with limited resources and are thus less likely to receive a quality education. The enrichment activities, guidance counselors, and other resources that put a child on the college track at an early age are lacking for many low-income students.

Perhaps one of the most significant academic markers for girls is the sharp drop-off in math and science proficiency that occurs among girls in middle school and high school. By 8th grade, only 32 percent of girls are proficient in math, and 27 percent, in science. By 12th grade, those numbers have dropped even further: 24 percent of girls are proficient in math and 18 percent in science. Unable to perform the basics of math and science, the majority of girls are cut off from the more lucrative science, technology, engineering and math (STEM) careers at an early age. While there is a drop-off for both girls and boys, women start at a lower level of proficiency and continue at a lower level of proficiency, as can be seen in the charts below. In addition, boys' proficiency in math does not drop sharply until the period between the 8th and 12th grades, whereas girls' proficiency shows a steady decline between the 4th and 12th grades.

[13] Kayla Webley, "Rethinking Pre-K: 5 Ways to Fix Preschool," *Time*, Sept. 26, 2011, available at http://www.time.com/time/nation/article/0,8599,2094847-2,00.html.
[14] Speech by Chairman Ben S. Bernanke at the Children's Defense Fund National Conference, July 24, 2012, available at http://www.federalreserve.gov/newsevents/speech/bernanke20120724a.htm#fn4.
[15] Rebecca Strauss, "Schooling Ourselves in an Unequal America", *New York Times,* June 16, 2013, available at http://query.nytimes.com/search/sitesearch/#/schooling+ourselves+in+an+unequal+america

Figure 6: A declining share of students show competency in Math and Science courses at the K-12 level (Essential prerequisites to a postsecondary education in Science, Technology, Engineering and Mathematics STEM).



Source: The National Assessment of Educational Progress (NAEP). The Nation's Report Card (2011).

Though a higher percentage of boys drop out of high school compared to girls (3.8% for boys and 2.9% for girls), the economic consequences of not completing high school are even more severe for girls than for boys.[16] Even if girls later pass a General Educational Development (GED) test, their earning potential will be lower than if they graduated from high school. According to the U.S. Census Bureau, in 2009, 16.9 million adults earned a GED certificate to satisfy their high school requirements. The Bureau reports that "while 73 percent of those who received a high school diploma went on to complete at least some postsecondary education, less than half (43 percent) of GED certificate recipients did so. Furthermore, only 5 percent earned a bachelor's degree or higher. In contrast, of high school diploma holders, 33 percent earned this level of education." [17] Studies by Chicago's James Heckman have also shown that the GED has "minimal value in terms of labor market outcomes."[18] Despite these negative

[16] National Center for Education Statistics, Education Digest, 2012. These statistics do not include students who take longer than four years to graduate and those who earn a GED certificate instead of a high school diploma.
[17] U.S. Census Bureau, http://blogs.census.gov/2012/02/27/ged-recipients-have-lower-earnings-are-less-likely-to-enter-college/

[18] Heckman, 2010, The GED.

outcomes, for many "at-risk" students, completion of the GED may present better options that the alternative of not completing it at all. Obtaining a GED is associated with higher earnings at age 27 for those male dropouts who had very weak cognitive skills as 10th graders, but not for those who had stronger cognitive skills as tenth graders.[19]

Postsecondary

Certificates

The financial consequences of highest level of educational attainment are profound, affecting a woman's ability to support herself and her family. In this section we look at the occupational choices women make, and the complex reasons behind those choices, which all too often limit a woman's lifetime earning potential.

Nowhere is this more apparent than at the certificate level. Of the 15 different certificate fields of study identified at postsecondary institutions that qualify for U.S. federal student aid, 13 are extremely "sex segregated"—meaning that one gender makes up at least 75 percent of enrollment. Certificates can be a stepping stone on a somewhat circuitous education pathway. But men seem to get far more labor market traction from this strategy than women. That may be, in part, due to the types of certificates women earn – for instance, cosmetology, healthcare, or food service—while men gravitate more often to higher-paying fields such as welding and air conditioning repair.

Overall, the wage premium conferred by earning a certificate, as compared to a high school diploma, is 27 percent for men, but just 16 percent for women. The disparity is so great that it's often better for women to forgo earning a certificate and aim instead for at least a two-year Associate's degree—though there are caveats. Women in certain high-earning certificate fields such as engineering or computing, do well compared to their male counterparts, and certificates may also be a good option for women who are interested in a credential that will give them the flexibility to accommodate family responsibilities such as a cosmetology credential.

[19] Murnane et. al. 2000.

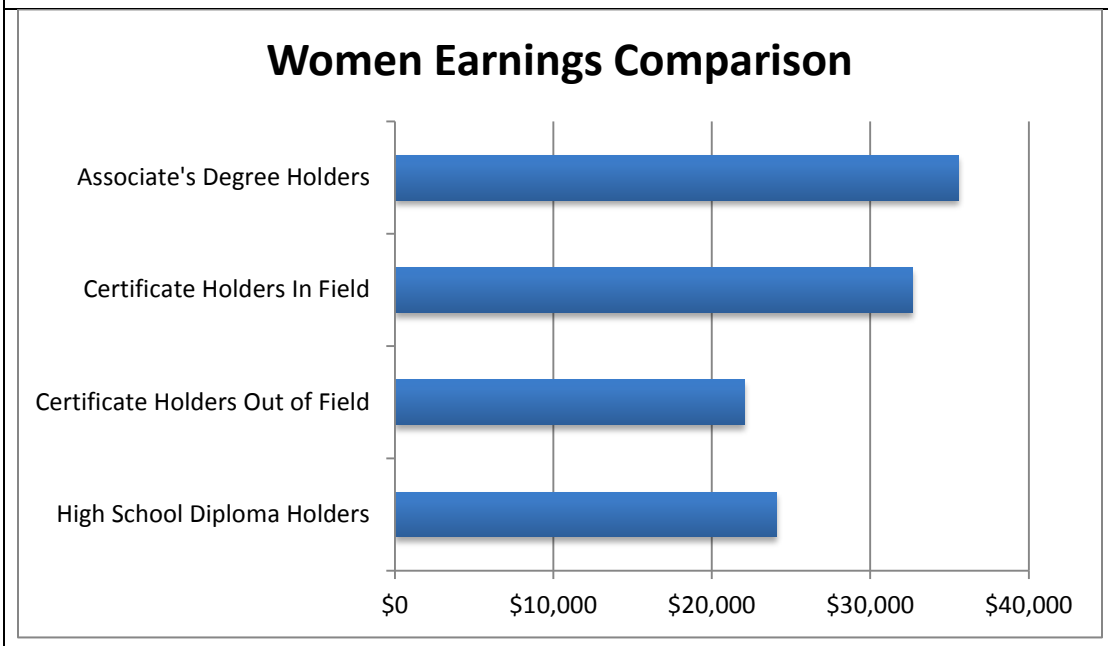
Certificates Often Do Not Lead to Middle-Class Earnings for Women

Table 1: Female certificate holders' earnings are low, especially in food service and cosmetology.

Certificate field	Percentage of women in each field	Median earnings	Relative earnings to all female certificate holders
All		$27,191	
Business/Office Management	19.4%	$32,690	20.2%
Computer and Information Services	6.1%	$29,986	10.3%
Police/Protective Services	0.5%	$27,761	2.1%
Other Fields, not specified	29.9%	$26,938	-0.9%
Healthcare	27.5%	$25,753	-5.3%
Transportation and Materials Moving	0.7%	$25,686	-5.5%
Cosmetology	14.3%	$22,711	-16.5%
Food Service	1.4%	$20,974	-22.9%

Women with certificates who work out of field earn less, on average, than women with high school diplomas.

Figure 7: For women who pursue postseconday certificates, getting a job in field is extremely important to earning a living wage



Source: Carnevale, Rose, Hanson (2012)

As shown in the chart above, the opportunity cost of obtaining a postsecondary vocational certificate may not be worth it for women if they do not find a job directly related to their academic field. In fact, women with just a high school diploma out-earn women who hold certificates when the latter work in jobs not directly related to their educational credential. So why do many women bother to earn certificates when there is so little apparent financial benefit? We offer three possible answers. First, there are many part-time opportunities for women in these fields, and women may have chosen the fields for the added convenience of being able to set their hours or to move in and out of the labor force; hence, their lower earnings may be due to fewer hours worked. Second, there are few medium-paying medium-skilled jobs available to women without at least a two-year college degree. A final possibility is that these workers are getting non-monetary benefits from their certificates, such as increased job freedom, career relevance and reduced work stress (Rosenbaum, 2011).

Healthcare, transportation, cosmetology, and food services jobs offer especially low returns for women, with pay levels below the average earnings of all other certificates. Business and office management and computer and information services pay better, but are not exceptions to the rule.

For-Profit Colleges

For-profit colleges are another area deserving of additional scrutiny and greater transparency. Since 1996, women have been between a quarter and a third more likely than men to obtain a Bachelor's degree within four years of having begun at a four-year college or university. This trend is also true for women who begin at public and private, nonprofit colleges and universities – but not at for-profit colleges and universities.[20] This is significant because women are two-thirds more likely to enroll in for-profit postsecondary institutions than are men (12% vs. 7%).[21] By enrolling at higher rates in for-profit postsecondary institutions, women make it more difficult to earn a Bachelor's degree in four years. Data from the Beginning Postsecondary Students survey suggest that low-income students, particularly those from minority groups, have extremely low graduation rates from for-profit institutions. The overall Bachelor of Arts (BA) attainment rate for women at the for-profit, four-year institutions is 12.1 percent. For African-American women, that rate falls to 1.7 percent. Among individuals from families below 150% of poverty, that rate goes to zero.[22]

Women tend to enroll in for-profits at higher rates than men, in part because for-profits market through traditionally female channels and they make themselves more accommodating to the needs of women through flexible scheduling and online classes. But all too often, the goal is to get women in the door and not across the stage. The rapid growth of publicly traded for-profits has worked against the interests of women as the growth has come in institutions that are more focused on posting returns for investors than in promoting success among their students.

Baccalaureate degrees

Many of the patterns of occupational segregation that we observe in the labor force start long before young adults get their first job. In postsecondary institutions across the country, women congregate in certain types of majors more so than men. The subjects that they choose in college sometimes reflect performance outcomes in the K-12 system but often do not.

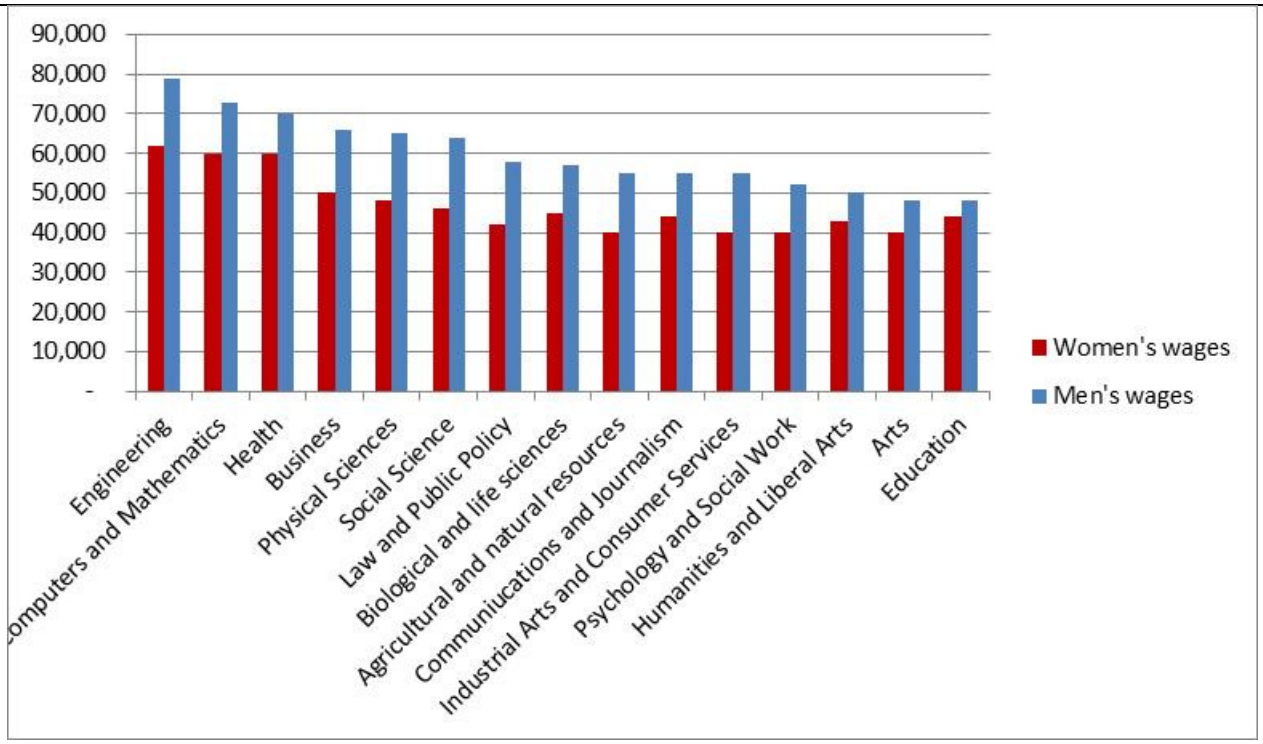
[20] *Table 376, Digest of Education Statistics, 2012, National Center for Education Statistics, 2012.* http://nces.ed.gov/programs/digest/d12/tables/dt12_376.asp

[21] *National Postsecondary Student Aid Survey, National Center for Education Statistics, Computation by NCES PowerStats Version 1.0 on 7/12/2013, NPSAS institution type by Gender and Race/ethnicity (with multiple) and Gender.*

[22] U.S. Department of Education, National Center for Education Statistics, 2003-2004 Beginning Postsecondary Students Longitudinal Study, Second Follow-Up

For various reasons, women tend to choose majors that systematically pay lower wages in the marketplace. Below we provide examples showing the average earning power of Bachelor's degrees by subject area, and for vocational certificates – information that could easily be made available to students *before* they embark on a course of study, and now the subject of federal legislation described below.

Figure 8. By baccalaureate major, women earn less than men even in entry level positions. Some majors are still worth more than others from the start. Entry-level Bachelor's degrees earnings by major and sex



Source: American Community Survey, 2010-2012 pooled data.

Gender disparities are also reflected in salary ranges. And here, there are two key issues. One is that women are paid less than men even when they have the same degree and work in the same field. The other is that women choose and dominate low-paying fields. In the fields shown in the chart, among Bachelor's degree holders, the entry level salary range for women is $40,000 to $62,000; for men, it's $48,000 to $79,000. The highest median earnings are found among engineering majors, where there are relatively few women, while the lowest are in the education, psychology and social work groups, where women outnumber men. Women make up 97 percent of all early childhood education majors, followed by medical assisting services (96 percent) and communication disorders sciences and services (94 percent). Men, on the other hand, concentrate in majors like naval architecture and marine engineering (97 percent) and in mechanical engineering and related technologies (94 percent). And even though many occupations

in the female-dominated social sciences and humanities require a graduate-level education, wages earned by those graduate degree-holders still never quite reach the wage levels of graduate degree holders in the higher paying, male-dominated majors.

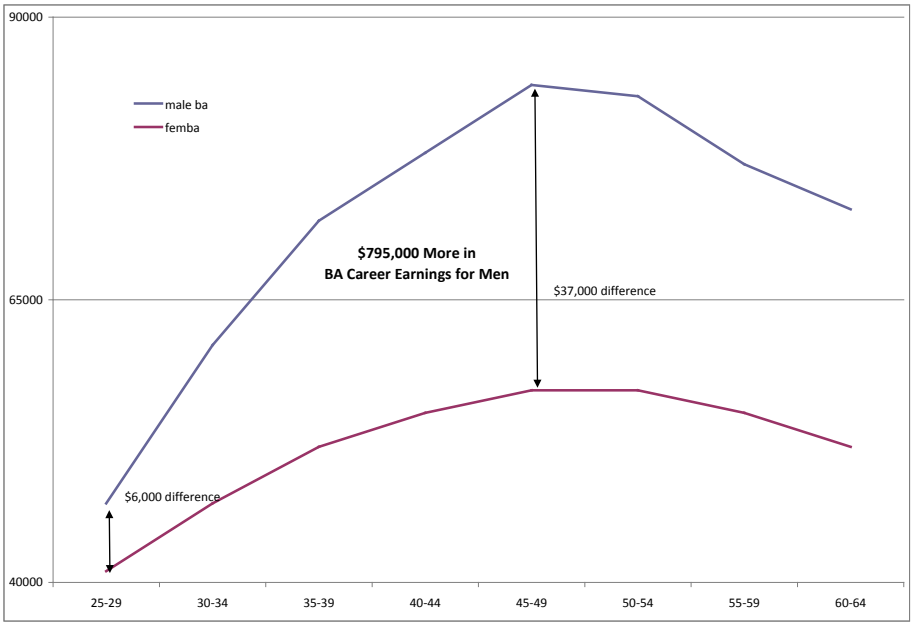
There is substantial literature which indicates that traditional ideas about women's roles in society begin to exert an effect on girls as early as middle school, and that early on in the career decision-making process these traditional ideas seem to exert a greater influence on girls than do starting salary figures. The influences are communicated in subtle and varied ways, starting with the common expectation that little girls should play with dolls instead of building blocks. Later, these grow to include such factors as classroom climate, sex stereotypes, gender bias and discrimination, the male-dominated culture of science and engineering departments in postsecondary institutions, and the lack of female role models in male-dominated occupations. However they are determined, these interests and values become key determinants in the occupational choices that women make—and these have major economic consequences. **By the time Bachelor's degree-holders are in their peak earning years of 45 to 49, women are earning $37,000 a year less than men on average. By retirement age, this can result in a wage differential of as much as $795,000—or in real dollars, almost $1 million.**[23]

[23] Georgetown University Center on Education and the Workforce Analysis of American Community Survey data.

Graduate degrees

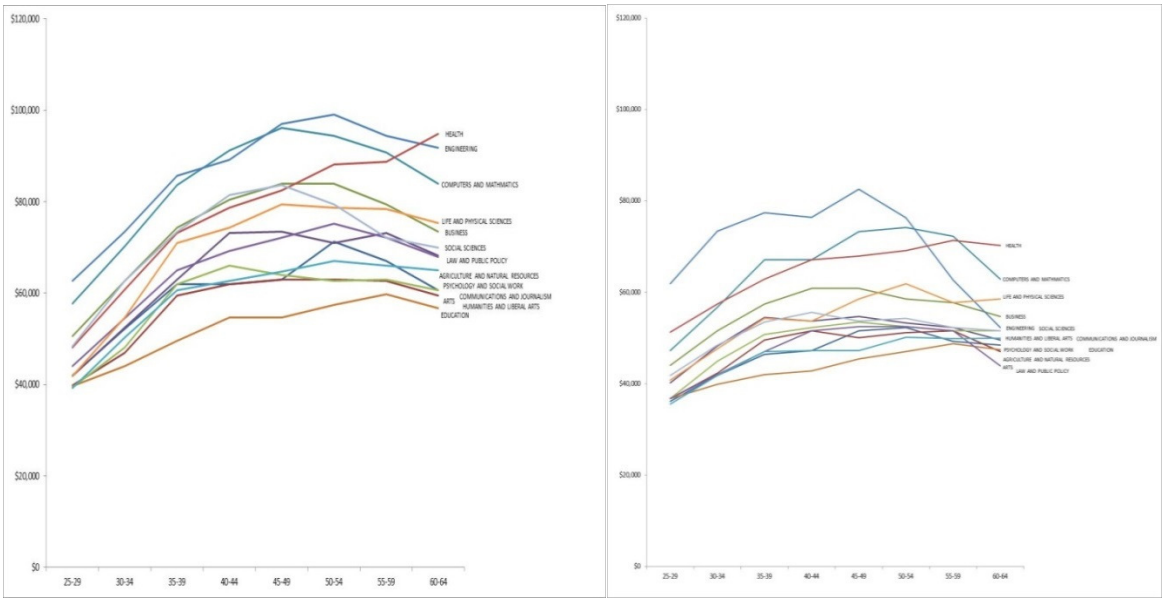
The story is similar when we look at gender differences in wages earned by Master's degree-holders. The wage differentials between men and women starts at $9,000 and peak at $33,000 by the time workers are in their early 50s, though the peak differential is marginally lower than it is for Bachelor's degree holders. Over a lifetime, men with Master's degrees earn just over $1 million more than do women with Master's degrees—and overall, women with graduate degrees still earn $260,000 less than men with Bachelor's degrees.

Figure 9: The gender wage gap peaks at about age 50



Source: American Community Survey, 2009-2011 pooled data.

Figure 10. The fields of study chosen in college have long-term wage consequences, especially for women



Source: Pooled American Community Survey (ACS) 2010-2012

Women in the STEM fields, as well as those in healthcare and business, have managed to earn relatively higher wages than all women combined.

Though Education Matters, Interest and Values Also Matter in Career Determination

With no adjustment for education level, occupational choice, job tenure, industry choice, union status, and "unexplained factors," the gender wage gap is 77 cents on the dollar. One unexplained factor that may contribute to the wage gap is related to the interests and values of people who are successful in a particular occupation. When faced with the same choice set, women tend to select outcomes that might be more reflective of their noncognitive and personality traits than wages or prestige. For this reason, this section explores the extent to which differences in interests and values influence occupational choice.

Using American Community Survey data, we assigned occupations to two distinct categories based on the sex of the workers in the occupations. The so-called "female" occupations are defined by a cluster of distinct characteristics—a generalization we can make based on an analysis of a detailed

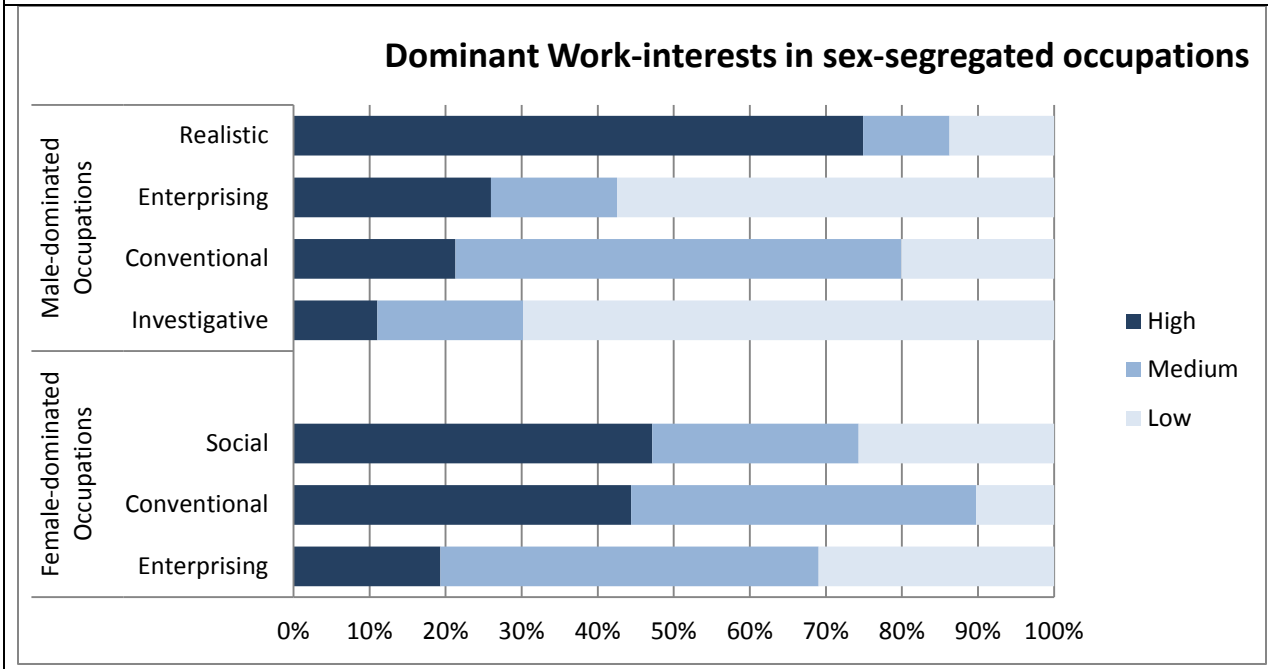
database called O*NET (Occupational Information Network). O*NET data have limitations. They describe the characteristics of occupations, not workers themselves, **and they do not show us which competencies are more important than othe**rs. Even so, O*NET offers the most comprehensive and rigorous description by workers themselves of some 1,100 occupations, broken down by cognitive measures, such as knowledge, skills, and abilities, as well as by non-cognitive measures, such as interest, values, work context, and personality traits. Values include such intangibles as recognition, achievement, autonomy, advancement, and social service. Interests generally fall into one of six categories: realistic, investigative, artistic, social, enterprising, and conventional.

Disparities in pay are only symptoms of more deep-seated biases and social pressures that affect why women gravitate to certain occupations, courses of study, and majors. These, in turn, have a powerful effect on women's economic bargaining power and lifelong earning potential. Even when women select competitive majors, they choose occupations related to those majors that offer relatively lower pay, and they are less likely to change occupations once those choices have been made. A woman who earns a mathematics degree, for example, may go to work as a high school math teacher, while a man with the same degree might pursue a more lucrative career in aerospace.

Since job performance and job satisfaction are so dependent on the extent to which the job matches an individual's interests and values, non-cognitive measures are just as important as cognitive measures in determining a worker's choice of occupation and success in any given field. For example, someone interested in working with others might find being a desk-bound mathematician unsatisfying, even if he or she is highly skilled at math; a skilled teacher who highly values her personal autonomy might chafe working under a principal who micromanages her lesson plans**.** While there is some overlap, distinctly different sets of values and interests emerge when we look at female-dominated jobs such as nurses, healthcare workers, teachers, and food service workers versus traditional male-dominated jobs such as assembly line workers, engineers and scientists, surgeons and lawyers.

In male-dominated occupations, work values linked to job satisfaction are *achievement*, *independence*, *working conditions,* and *support*; in female-dominated occupations, the most important work values for job satisfaction are *relationships, achievement* and, to a lesser degree, *independence.* Achievement and independence are hallmarks of jobs that allow a worker to use the best of his or her abilities and to stand out from the crowd; not surprisingly, these are values common to both male- and female-dominated occupations. The big difference is *relationships,* a value accorded high importance by workers in 75 percent of all female-dominated occupations.

Figure 11: Interests and values differ for men and women. These concerns can trump other types of competencies in the decision to enter a particular career path.



Author's analysis of O*NET 17.0 and ACS, 2012

Realistic, enterprising, conventional, and *investigative* work interests are most highly associated with success in male-dominated occupations, which tend to involve hands-on problem solving and factual research; in female-dominated occupations, the traditional work interests linked to jobs are *social, enterprising,* and *conventional*. These interests usually describe jobs involving communicating with and teaching people, often in professions that provide service to others.

It is immediately apparent that male-dominated fields tend to pay higher wages, even for those with relatively lower levels of educational attainment, such as production workers. Indeed, 30 percent of high school-educated males in production occupations can earn upwards of $35,000 per year; in comparison, only 5 percent of similarly qualified women earn that much.

Barriers to Success:

Lack of Information

A key barrier to college enrollment and success is still the lack of information to help women make informed decisions about their educations. What kind of financial aid is available and how does a student apply –and avoid excessive debt? Which majors and courses of study lead to incomes adequate to avoid life on the brink? What support is available to students who are the first in their families to attend college?

These questions point to the need for a public service that is not currently provided: a federal government site that clearly shows students everything they need to know about different schools to make an informed choice. In May 2013, U.S. Senators Ron Wyden (D-OR), and Marco Rubio (R-FL), Mark Warner (D-VA), and U.S. Representatives Duncan Hunter (R-CA) and Robert Andrews (D-NJ) introduced bipartisan legislation that aims to provide students and families with the information to make more informed decisions about higher education. Specifically, it would streamline existing institutional reporting requirements to enable students, families, institutions, and policymakers to assess schools and programs based on a wide range of data, including graduation rates for non-traditional students, transfer rates, percentage of graduates who pursue higher levels of education, student debt, and post-graduation earnings and employment outcomes.

Also lacking is easily available and digestible information to show the economic outcomes of various courses of study. In particular, there's little information upfront about certificates and for-profit colleges, avenues that may seem to be good options but in reality do not always provide economic security for low-income and minority students, who comprise their fastest growing proportion of customers.

Diversion of Talent

Even when women select more lucrative majors and certificates in college, occupational choices in the labor market still largely reflect social norms. Understandably, not everyone with a competency in the sciences ought to pursue that area of study, but if there is systematic diversion of female talent away from these outcomes, there is cause for concern.

Our research shows that the second fastest-growing occupational cluster--STEM jobs--shows a paucity of participation by women at all levels of education due to diversion at the high school level, the college level and finally in the workforce. Long-established roles channel STEM-capable young women at the high school level away from STEM degrees and into the liberal arts or care-providing training. The trend continues at the college level as women choose to pursue fields of study that lead to professions very distinct from those of men, reinforcing the channeling into the liberal arts or care-providing occupations that began in high school.

This diversion of female STEM talent is highly correlated with interest in STEM study, which is correlated with cultural and traditional workforce roles that women have adopted in the past. Today, although women receive 52 percent of high school diplomas, 62 percent of Associate's degrees, 57 percent of Bachelor's degrees and 52 percent of PhDs and professional degrees, their degrees are concentrated in liberal arts training or care-providing professions. As a result, the earning power of women as a group tends to be lower than that of males with the same education level, largely due to occupational and industry choices for other than STEM fields.

Women make up 81 percent of the 1.5 million low-income single parents who are students. [24] For many young women, the intense responsibility of being student, breadwinner, and caregiver is enough to drive them to quit their course of study. According to the U.S. Department of Education, more student parents (49.7 percent) are likely to leave school after six years without a degree than are non-parents (31.1 percent). [25] The lack of accessible, affordable child care looms as a primary barrier to their postsecondary education. According to one study, only 5 percent of the child care needed by student parents is provided at on-campus child care centers, pointing to an enormous gap in the support system for women attempting to further their education.[26]

For other women, extensive family obligations and a lack experience with the college environment are factors that keep them from completing their degrees. Though the family structure has changed since the 1963 report (51% of young women over the age of 15 today are married compared to 75% in 1963), the burden of single parenting today still rests heavily on women.[27] Unmarried women account for over 40 percent of all births today, compared to 5 percent of all births in 1960.[28]

[24] Improving Child Care Access to Promote Postsecondary Success among low-income parents, p. 8.
[25] Improving Child Care Access to Promote Postsecondary Success among low-income parents, p. 13, citing U.S. Dept. of Health and Human Services 2009).
[26] Institute for Women's Policy Research, *Improving Child Care Access to Promote Postsecondary Success Among Low-Income Parents,* 2011
[27] Pew Research Center, 2010
[28] Ibid.

For single parents attending college, financial realities weigh heavily. Though fewer women were pursuing college majors in 1960 (46% of enrollment), the burden of college tuition debt was very different from today. In real inflation-adjusted terms, the cost of attending a public four-year institution has risen from $6,194 in 1960 to $16,253 in 2012. Since the 1980s, college tuitions have risen, on average, at three times the rate of growth of household incomes. For a student with no other option than to pay her or his own way using loans, this debt can be daunting. Two-thirds of college seniors who graduated in 2011 had student loan debt; the average for all borrowers was $23,300.[29] The total student loan balance now stands at about $1.1 trillion, surpassing total credit card balance and total auto loan balance. This number is only expected to grow as college enrollments increase and tuition costs continue to rise. And unlike the 1960s, there is no longer a bankruptcy "way out" for especially onerous student loan debt. In the 1960s, when student loans were first introduced, one could legally discharge the loan through bankruptcy after five years. Since 2005, however, bankruptcy laws have been rewritten specifically to prevent the write-off of government issued student loans due to "undue hardship." For many, student loans can now follow them into their retirement years.

Policy Prescription: Connecting Wage Records to Curricula

Though it is unclear what effect it will have on students' labor market decisions, colleges should provide greater transparency regarding the money value of college courses, programs, and majors. The value, expected payoff, and long-term costs of specific college majors and programs of study should be available to every potential and current college student.

The basic elements of a college and career information system already exist—both at the federal level (including the U.S. Department of Education's College Navigator system and the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook) and at the state level. (State Longitudinal Data Systems, or SLDS, provide access to longitudinal databases and wage record data that already link education programs to workforce outcomes on a student- by-student basis.) Coordinating this data would make it possible to show the earning capacity of former students, linked all the way down to specific college courses. Better access to such information would allow everyone involved to analyze better the cost-benefit ratio of particular degrees and programs of study.

But there are three main problems in getting this data from the nation's statistical warehouses to the kitchen tables where college and career choices are made: logistical issues, lack of money, and lack of

[29] http://libertystreeteconomics.newyorkfed.org/2012/03/grading-student-loans.html

political will. Most states have made the effort to connect education and training programs with labor markets in their internal data systems, but have not developed usable formats for students, policy makers, or postsecondary administrators. Senators Ron Wyden (D-Ore.) and Marco Rubio (R-Fla.) have introduced the Student Right to Know Before You Go Act, which would take the next step in developing these state systems in usable formats. Similar bipartisan legislation, H.R. 4282, has been introduced in the House of Representatives.

There has been some action by the federal executive branch to address this issue, too. As part of the federal stimulus package introduced by the Obama administration, $500 million was allotted to states to help in creating and improving access to these databases. But when the federal money ran out, there were no state funds available to continue data collection.

The biggest hurdle, however, is political. Private colleges and universities and, to a lesser extent, public ones fear that this kind of information would put an artificial value on a college education, especially in the liberal arts, and that institutional reputations would be reduced to a ranking system based on the employment rate of their graduates and the size of those graduates' paychecks. Pressure from the higher education establishment is the primary reason that even though 22 states have collected this data, the public has so far not been allowed to see it. More than two years ago, the U. S. Department of Education issued regulations aimed at forcing for-profit trade schools to reveal statistics on how many of their graduates were employed and how much they were earning. Those regulations were promptly challenged in court and the disclosure requirements of the rule were upheld. However, the court also significantly limited the Department's ability to collect data on former students who did not receive federal student loans. As a result, the efficacy of the more limited data, based solely on federal loan borrowers, has not been assessed and could prove misleading to prospective students who do not rely on student aid.

But young people making their first major investment decision, especially those who will have to depend on student loans, should not be choosing their postsecondary program in a vacuum. They need to understand the risks and rewards associated with their choice of colleges and fields of study, especially as the cost of particular certificates and degrees rises and labor market needs shift. Aligning education more closely with careers is also the best way to encourage student success. People who are given some navigational tools are more likely to get where they want to go.

Ultimately, if we are to tackle the gender wage inequalities that exist today, we will need policies that address the biases and social pressures brought to bear on young women choosing their courses of

study and occupations. This will likely require, among other things, substantial changes to the factors, such as classroom culture and sex stereotypes, discussed above.

Conclusion

Women have done exceptionally well in the past 50 years if we look only through the lenses of educational attainment. At every level of postsecondary educational attainment, women dominate, and they are a clear majority on most college campuses. Yet, despite these bold and admirable achievements, one in seven women still lives in poverty in this country. The gender wage gap has declined by a mere 17 cents in the last 53 years, and the United States remains one of the least upwardly mobile societies in the developed world.

With so much emphasis on the "Mancession" and the decline in opportunities for workers in construction and manufacturing, the issue of women's low and unequal wages has slipped under radar, except for the recent focus on raising the minimum wage. The Great Recession brought with it structural change that resulted in the permanent loss of high-paying jobs in sectors that were dominated by men and growth in jobs, many of them low-paying, in sectors dominated by women. The underlying story, though, is not one about the sex of the workers gaining and losing jobs, but about their education level. Less-educated individuals lost more in the recession and continue to lose jobs in the recovery. Women workers often are attractive to employers, not only because they tend to be more educated, but because employers are able to hire them at lower wages than those paid to men with the same level of education.

Not only are women paid less in occupations across the board, women tend to be concentrated in low-paying occupations, thus cementing their fate as relatively lower earners. Part of the reason for this has to do with societal norms that:

- Attract women into liberal arts majors and relatively low-paying certificate fields.
- Divert women into care-giving and nurturing occupations irrespective of the major pursued in college.

Interests and values are powerful non-cognitive competencies that result in occupational segregation to women's economic disadvantage. What this means on a practical level is that we need to attract more female talent to STEM and other higher-paying fields at the high school and college level and to promote greater equity in wages between the sexes, thereby decreasing the gender wage gap that is associated with this disparity among disciplines and occupational choices.

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